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Influence of unconventional intensity assignments on the parameters of historical earthquakes

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The assignment of a macroseismic intensity value is performed by comparing the effect description found in the source (historical, questionnaire, etc.) with a sequence of ideal word pictures.
Particularly for historical events, information provided by the sources are seldom not easily translatable in terms of intensity, for instance according to the EMS98 guideline. In order to preserve as much as possible of the original information and to make it usable in some way, intensity may be assigned:
a) to places which are not suitable for proper intensity assignment, such as large areas, too small settlements, etc.;
b) using a number of reported damages that does not fit the statistical meaning of the intensity, such as monumental buildings within a settlement or isolated buildings;
c) with inappropriate notations, such as F, HF, D, HD, other damage codes, $\geq$7, 7+, 7?, (7), etc.
These intensity assignments are negligible for recent events but can represent most (or, in few cases, even the whole) of the intensity distribution of more ancient earthquakes.
When used as input for computer codes to assess earthquake parameters, different and not straightforward choices are possible for the treatment of unconventional intensity values. According to the investigator own practice, these values can be completely excluded from the computation or converted into numerical values.
The choice performed and the used conversion scheme strongly influence the resulting epicentral location and magnitude and do not guarantees the repeatability of the process.
A test on the parameterization of macroseismic data of European earthquakes with unconventional intensity values was performed, with different choices and conversions. The resulting parameters showed significant differences, in the order of several tenth of kilometres in the epicentral location and more than a unit of magnitude.